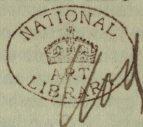


FRASER'S MAGAZINE.

NOVEMBER, 1852.



THE EXHIBITION JURY REPORTS.

JUST one year after the Exhibition Juries* closed their judicial career, the reports of the cases argued and determined in the high court of the Crystal Palace are delivered to the world. The officers of the Exhibition can hardly be considered responsible for this long delay. So long ago as June, 1851, they wrote to all the reporters to stimulate their activity, representing to them (what was obviously the case) that it was very desirable that the publication of the reports should be coincident with that of the awards, which were then expected to be published as early as July, 1851, or at any rate some time before the close of the Exhibition; and a short time before its close, the writers of the reports still unfinished were again urged to complete them in time to be published with the awards. Many of them, we know, were completed, and some of them were in type, long before that time. But considering the great labour evidently expended on some of them, and that by persons whose time was not their own, it would be hard to blame the authors either for the delay, which they probably could not have avoided, except by performing their work in a hurried and insufficient way.

Still, when we look at the quarter of a hundred-weight of paper, and the mile of columns of printing, and the millions of types contained in the four huge volumes called the *Illustrated Catalogue* and the *Jury Reports*, and remember that the publication of that catalogue was coincident with, not the opening, but the closing of the museum to which it professed to be a guide, and that the reports which were to elucidate the decisions of the juries were delayed till the decisions them-

selves were well nigh forgotten, it is impossible not to feel that the original mistake of the prize system has, somehow or other, pervaded and spoiled everything within its reach.

As for the *Illustrated Catalogue*, (with which the publishers of the *Reports* have done their best to connect that volume, by their troublesome and useless interruptions of perpetual references,) it is really not easy to conceive anything more different, not only from what it was expected to be, but from what most of the newspapers described it to be, after they had seen it, under the influence, we suppose, of a good-natured disposition to see nothing but success in the Exhibition arrangements, or perhaps under the too confiding impression that so large a book must contain a large amount of information.

Those who only know that catalogue from the descriptions they have read of it in the newspapers, must have supposed that they would find there scientific accounts of the latest philosophical discoveries, intelligible descriptions of important mechanical inventions, useful and interesting information about the miscellaneous articles of use and ornament catalogued and represented in its pages. Those who know of it from examination of its actual contents, have long ago made the discovery, disagreeable enough if it cost them three guineas, disappointing enough if it cost them nothing, that the catalogue is nothing but a heterogeneous collection of notices, of which neither the length nor the style has any assignable relation to any quality whatever of the thing exhibited, but simply to the conceit, or modesty, or taste, or descriptive power of

* So called, apparently, because they were not *juratores*, and because neither their functions nor their modes of proceeding were at all analogous to those of juries, and were analogous to those who had always before, in all English exhibitions at least, been properly called judges.

each exhibitor, with such literary assistance as some of them received from the editors of the catalogue in correcting their descriptions. There are inventions and manufactures of the greatest importance and value, of which everybody who refers to the catalogue at all would desire and expect a full and accurate description, but of which they find just two lines, one containing the name and address of the exhibitor, and the other the designation of the thing he exhibits, sometimes in a single word. And again, there are instances enough of descriptions and pictures occupying a page or more, of things which are of no value to anybody, and which have only been thus described and portrayed by way of advertising the names of authors of the descriptions.

On the compilation, and editing, and correcting, of these three volumes of 'illustrated' rubbish, the labours of a considerable staff of considerable men were expended during nearly the whole six months of the Exhibition, independently of the labours of the 283 jurymen. We are far from saying that they, being set to do that task, could have done it better. What we do say is, that they ought not to have been set to do it at all; and that if there was to be an illustrated catalogue, it should have been, not compiled, but composed, by the officers of the Exhibition, with such assistance as would have enabled them to do the work completely and properly within a reasonable time. It was very soon perceived that want of funds would present no difficulty. It must have been equally soon perceived by the managers of the Exhibition (as it certainly was by some of the chairmen of juries, to whom the duplicate slips of descriptions sent in for the great catalogue were handed) that a catalogue made up of such descriptions as those must be a mere waste of paper and printing.

But for that unlucky blunder of the establishment of the prize and jury system, we can hardly doubt that this would have been done, and the importance of having a good descriptive and discriminating account of the contents of the Exhibition would have been recognised, and the proper measures taken to supply it. And who can

doubt that if a tenth part of the force, and a hundredth part of the time which was spent in correcting, and amending, and annotating the exhibitors' contributions to the catalogue, and in unprofitable squabbles about 'great' and 'ordinary,' or 'council' and 'prize' medals, had been employed in composing such an account of whatever was really worth noticing in the Exhibition, it would have been worth far more than all the pictures, and reports, and medals together, not only to the public, who desired the information, now to be had nowhere, but to the exhibitors, whose productions would have been so recorded?

What makes all this the more provoking is, that it is no longer any secret that those who directed the affairs of the Exhibition saw quite as clearly and quite as early as other people, that the prizes were a mistake, and ought never to have been instituted; but it was, nevertheless, determined to go through with the business, out of the notion that foreigners had only consented to exhibit their goods on the faith that these decorations should be a part of the exhibition scheme. And so, instead of boldly acknowledging and correcting the mistake as soon as it was discovered to be one, it was attempted, by a succession of nearly incomprehensible and quite unsuccessful devices of 'rules' and 'instructions,' and 'explanations,' and 'minutes,' and, finally, by a promiscuous distribution of medals to everybody, to deprive the two orders of prizes of the character which the public were certain to attach to them, in spite of all the explanations in the world.

Perhaps the most absurd of all those devices was that of substituting the names of council and prize medals respectively for those of great and ordinary medals, by which the two orders of prizes had been known all through the deliberations of the juries and the council of chairmen, and indeed until after many of the reports were in type. It was evidently imagined that by thus giving them names apparently implying a dignity the reverse of what they had previously enjoyed, people might be induced, at any rate, to put them on an equality. There is something truly ludicrous in this spectacle

of a number of very clever men, every one of whom would have seen the folly of it if he had been acting by himself, sitting round a table and pretending to be persuaded that, by a little shuffling of a couple of names, all the nations of the world could be made to forget or misunderstand which of these prizes had been all along treated and fought for as the highest or 'great' one, and which as the 'ordinary,'—which had been ordered by the Royal Commissioners themselves to be given for 'pre-eminent merit,' and which, therefore, for merit not pre-eminent—which required nothing but a formal confirmation, and which was subject to the further discussion of two successive courts of appeal from the decisions of the juries.

It is all over now: the steed is stolen, and it is not much use inquiring what is the best lock to put on the stable door; but, nevertheless, it is not insignificant, and may not be useless, to look back upon this memorable instance of the fatuity in which men may get involved when they once wilfully shrink from looking the truth in the face, and abandon the plain and distinct line which common sense points out, either from a vain desire to appear consistent when they have really changed their opinion, or from a foolish deference to the fancies of some considerable person, whom they, after all, only expose by not correcting him.

At the same time it is only fair to many of those who have been disappointed in consequence of the operation of the rules which were laid down for the administration of the two orders of medals, to state distinctly that, but for the attempt of the Royal Commissioners to do away with the inevitable effect of having two orders of medals by the invention of these rules, which it was the duty of the juries, and more particularly of the council of chairmen, to attend to and enforce, the awards would, in many cases, have been different from what they were. The council knew just as well as the musical jury, for instance, that if a 'great' or 'council' medal was intended to indicate what would be called at Oxford a first class degree of merit, Broadwood's pianos were quite as well entitled to it as Erard's. But the

commissioners, whose decrees the council had to execute, had declared that the great medals were *not* to be given on that ground, but only on the ground of some distinct and peculiar invention. A member of the musical jury itself (as Messrs. Broadwood's advertisements of their grievance acknowledged) had raised the objection in the meeting of the group of juries (which was the first court of appeal), that Broadwood's pianos, however excellent, contained no distinct invention; and the objection very nearly prevailed in that meeting, as the same objection did prevail in the case of Messrs. Collard; and it was properly reported to the council of chairmen by one of their body who had been present at the group meeting. The chairman of the musical jury, as was done in every similar case, thereupon explained to the council at considerable length the grounds on which his jury had awarded the medal; and the council, giving to the jury, as they always did, full credit for having found and reported the facts correctly, decided that those facts did not bring the case within the rules of the commissioners for the awarding of a council medal.

The case of Mr. Simms, the well-known maker of astronomical instruments, was much the same, on whose behalf a Clapham schoolmaster, who sent a telescope made for him by Mr. Simms to the Exhibition, and one of the Exhibition lecturers at the Society of Arts, who was a member of the jury, expressed so much wrath at the decision of the jury being reversed by the council. We happen to have been furnished with a note taken at the time by one of the members of the council, of the statements and votes upon all the great medals in that class, and opposite to Mr. Simms's name we find this note, 'Simms—astronomical instruments—*no peculiar invention*—negative, 12 to 2.' We do not pretend to say whether this report of the chairman of that jury, of *no peculiar invention*, was right or not; but three things are perfectly clear: first, that the council did not act in contradiction to, but in accordance with the statement of the jury by their chairman; and if there could be any doubt about this in any case, the

unusually large majority of six to one is conclusive in this case at any rate. Secondly, if Sir David Brewster did make any mistake in the statement which he gave to the council, the blame lies with those members of his jury to whom the telescope department was particularly intrusted, and who ought to have taken care to furnish him with proper information, and of whom this very lecturer at the Society of Arts not only was one, but acted as the secretary and reporter of the jury. And thirdly, the decision of the council, whether it was given on wrong information or right, implied no reflection whatever on the well-known excellence of Mr. Simms's instruments.

On this question of the occasional refusal of the council to accede to the recommendations of the juries for the award of great medals (for it should be remembered that the juries were only authorized to 'recommend,' and not to 'award,' this class of prizes), some persons seem to have thought it a sufficient answer to say that the council ought to have presumed that the juries had paid due regard to the rules of the commissioners in their decisions upon the council or great medals. They do not seem to perceive that this is merely equivalent to saying that the council was to do nothing but register the decisions of the juries, or, in other words, to do nothing at all. Moreover, the council knew that it was not the fact that the juries did universally regard this rule as they were intended to do. So little did some of them regard it, that at a late period of their proceedings the commissioners thought it necessary to impress it upon them more strongly by a special 'minute on the council medals,' by way of further instructions, issued at the instance of several of the chairmen of juries who had found themselves unable to enforce the aforesaid rule on their colleagues. And even after the issuing of these further instructions, a case was mentioned in the council, in which the foreign members of a jury, having got certain great medals voted to their countrymen, without due regard to this rule, objected successfully, by an equality of voices, to allow those medals to be

even re-considered with reference to the new instructions, but insisted upon taking their chance before the council. However, if we were to begin giving instances of the disregard of every rule, not only of the royal commissioners, but of justice and good faith, exhibited by many of the foreign jurymen, more especially the French, we should neither know when to stop, nor should we be telling anybody what is not already almost as notorious as the Exhibition itself.

Let us leave, then, the unprofitable task of investigating the history and causes of mistakes which cannot now be rectified, and proceed to examine this volume of reports, which, with all its defects, certainly now constitutes the best literary memorial of the Exhibition.

The differences of style and treatment exhibited by this three dozen of authors are such as might be expected from such a promiscuous body, acting quite independently of each other, and intentionally left unfettered or unassisted by any instructions or guidance as to the mode in which they were expected to perform their duties; many of them perhaps never having seen a sentence of their own composing in print before; some thinking it their duty to comply with the request of the commissioners, to send in their reports before the 15th of July, 1851, and consequently, perhaps, writing them in a hurry, and others reserving them for the leisure of the post-exhibition autumn, and even to the following spring. And by the bye, we observe that the editors have taken upon themselves to affix to some of the reports a date long after the time when we know that they were sent in. If the reporters themselves had affixed the date, they would of course have given that of sending in their report, and not that of some long subsequent correction of proof-sheets sent to them by the officers of the Exhibition. The object of this little anachronization it is not difficult to guess, when we see the publication of the whole volume delayed for a year after some of the reports were completed, and for ten months after the time when the public expected them to be published and when we be-

lieve most of them were actually in type. The only reasons why we call attention to it are, first, that it is not giving a true impression of the actual facts; and secondly, that the early, and perhaps hurried, completion of many of the reports may possibly be in some instances the excuse for their very unsatisfactory and undescriptive brevity.

Another thing which may account in some degree for this same brevity and meagreness is, that up to a late period of the Exhibition, in fact until it was found to be simply impossible to proceed upon that footing, the reporters were told that their reports must be approved and adopted by the whole jury, in the same way as the report of a Parliamentary committee or commission is the report of the whole body, or of its majority, if they differ about any part of it. The inconvenience of such a system in this case, and its inconsistency with the fact of one member being specially appointed and published as the responsible reporter of every jury, were, we know, pointed out and objected to as likely to affect both the time of finishing the reports and the mode of executing them, but apparently without effect; although time eventually settled that difficulty, as it does many others. Some of the earlier reports were submitted to the non-reporting members of the juries, and were even translated for the purpose, and their opinions were taken upon them; but when the prize-giving work was done, the juries separated, the members soon after went about their business, and of course the theory of the reports being submitted to them went about its business too. But it requires very little experience in matters of that kind to know that some persons would intentionally avoid everything beyond the barest narration of the fact that such and such things were exhibited and rewarded, if they thought that any further expression of opinions upon their relative merits, and even (as we know it actually was in one instance) the relative length of description which was given by the reporter to different articles, was to be made a subject of discussion with half-a-dozen other persons, who had perhaps already

been disputing whether any and what prize for the article in question was to be allowed at all.

In this way therefore, besides those before-mentioned, the prize system may very likely have exercised a damaging influence on the quality of some of the reports. At any rate, from that or some other cause, about one fourth of the whole number may now be pronounced utterly useless, seeing that they add nothing whatever to the information already given by the *Illustrated Catalogue*, little as that is, and the list of prizes published a year ago. The textile fabrics and their materials appear in all their branches to have been remarkably uninspiring to the reporters. The cotton, wool, silk, and flax reports (11, 12, 13, 14) are all merely in the *fortemque Gyan fortemque Cloanthum* style; and, in like manner, the animal division of the report on Class 4, Mr. Panizzi's version (for there are two) of that on the fine arts (30), and the report on carriages (5 A), might all have been written by some clerk to these juries, instead of by writers selected out of a body itself selected as the most competent judges in all the world of the subjects they were desired to examine and report upon.

The reports on shawls and mixed fabrics (15), on printed goods (18), clothing (20), cutlery (21), and pottery (25), or, as they more magnificently call it in Exhibition literature, 'ceramic manufactures,' belong to a class a little above those we have just now referred to; and if they had come out before the Exhibition had gone out, they might have been to a certain extent useful as a guide to those who wanted some assistance in directing them to the objects best worth attention in those classes. Now, however, they contain little that anybody will care to read, being occupied with explaining the principles on which those juries (as far as the reporters are acquainted with the motives of their colleagues) acted in their distribution of prizes, and with other matter of hardly any permanent interest.

We must confess that from Mr. Brunel we expected something better, or at least something more,

than a page or two of encomiums on Prince Albert and Messrs. Fox and Henderson and Paxton, for their respective shares in the Exhibition building, and the Prince's cottages near it; and yet that is nearly all that this great engineer has given us by way of a report on the 'civil engineering and building' of the year 1851.

The report on hardware, including locks, bells, and grates (22), deals with this large subject as if hardware is chiefly to be regarded as a vehicle for ornament. We submit to Mr. Dyce, that if he does not recognise any other use for grates and stoves, and if his jury, with the help of all their 'associates,' were really 'unable to pronounce any opinion on the efficiency of stoves for cooking by gas,' or 'on the comparative merits of kitchen ranges,' they had better have called in the aid of a few more associates, who could have offered an opinion on these things. Instead of that, they have given us a short treatise on what they apprehend to be the effect of the *law of fixtures* upon the grate and kitchen-range question.

Again, on the subject of locks, this jury seems to have consisted of the only persons in England who did not hear of the famous 'lock controversy' of last year. For one can hardly imagine that, if they had heard of a matter of so much consequence to the subject they were appointed to investigate, they would have altogether abstained from saying anything about it. They may be excused for not knowing, because very few people did know, fortunately for our safes and strong boxes, that the mode of picking Bramah's and Chubb's locks, by which the transatlantic Hobbs gained so much glory, was suggested and explained in the *Encyclopædia Britannica* nearly twenty years ago. But it does seem very strange that they, or at least their reporter, should not have known, long before the report finally left his hands, that Hobbs had picked both of those locks, and taught every lock-picker in England how

to do it, if he possesses the requisite tools and fingers. Of course however the reporter did know it, as nobody could read any newspapers last autumn without knowing it. And this jury did exercise their judgment to the extent of declaring that Hobbs's own lock (under the name of Day and Newell) 'seems to be impregnable.' Notwithstanding all which, they profess their inability to 'offer any opinion on the comparative security afforded by the various locks that have come before them.' The only discrimination which they venture to make, is that the keys of Bramah's and Chubb's locks are of convenient size, while Hobbs's is ponderous and bulky, and his lock complicated; and they might have added (without any very painful amount of investigation), enormously expensive in consequence of its complication, and probably also more likely, on the same account, to get out of order and stick fast, and so become rather inconveniently impregnable—on the money door of a bank, for instance, than the other two locks, especially Bramah's.* The reporter adds, that a lock by M. Sommermeyer, of Magdeburg, is 'very ingenious' (a very safe epithet for any mechanical invention); and that Wolverhampton maintains its ancient reputation as the principal seat of the lock manufacture. And that is all the information he thinks the public can reasonably desire or expect from this jury about that particular article in the hardware line which made more noise than all the rest together—except, to be sure (in a different sense), the bells.

And if any human being can make out from the *Supplementary Report on Bells*, anything beyond the fact that prize medals were given to every bell founder in the Exhibition, Sir Henry Bishop must have provided that fortunate individual with some private key to the relative value of the different adjectives of commendation which he has distributed among the bell-founders with the same impartiality as the medals.

* While we are correcting these sheets, we are grieved to hear of the death of Professor Cowper, of King's College, London, the well-known inventor of the printing press which bears his name. We believe that the last appearance in public of this most perspicuous teacher and truly worthy man was at the lecture which he gave on this subject of locks, at the Royal Institution, last spring.

There is hardly a town in England which could not have furnished a bell-ringing cobbler capable of awarding both the prizes and the praise to the various bells of the Exhibition with more discrimination than the united force of the hardware jury and the musical jury together could apparently supply. For a report of tolerable length, there is none which appears to us so unsatisfactory as this No. 22.

We must confess to some disappointment also at Professor Willis's report, on manufacturing machines and tools. From his well-known excellence as a lecturer on this subject, we expected from him one of the best treatises in the volume. But apart from the Exhibition itself, to which it is only fair to say his report would have been a valuable guide, if it had been published soon after we know that it was sent in, it is now little more than a catalogue of machines, intelligible of course to those who are already acquainted with them, but we should think quite useless to anybody else.

Dr. Hooker's report (3) on articles used as food, is another instance of what would have been an useful and interesting guide to that department of the Exhibition while it was open, though we should be sorry to have now to read it through as an independent treatise. Indeed, very few of the reporters seem to have remembered that the only kind of report which would have any chance of being really regarded as a 'permanent record of the Exhibition,' would be one which is capable of being read and understood by those who had no longer the Exhibition to refer to.

We have however, before we conclude, the more pleasing duty of referring to a class of reports which are really worth reading by themselves, inasmuch as they all contain more or less information which any inquiring person would be glad to find in a book which had no reference at all to any Exhibition. We have not abstained from giving utterance to the nearly universal opinion respecting the behaviour of the French jurymen in the matter of awarding prizes, and we may add, in their flagrant disregard of the obligation under which all the jurymen very distinctly accepted the office,

to keep the discussions and decisions of each jury secret until their final confirmation; and therefore we have now much satisfaction in being able to say, on the other hand, that several of the best reports in this volume are written by Frenchmen: we should specify particularly M. Dufresnoy's (No. 1) on minerals, and M. Dupin's (8) on naval architecture and military engineering.

In M. Dufresnoy's will be found descriptions of the methods of making black-lead pencils out of powder which was previously useless for that purpose; of separating silver from lead, of coal working in France, of condensing sulphur vapours, of making seamless iron tubes; and statistics of the mineral resources of different countries; and a great deal of other matter, constituting on the whole a very interesting treatise on the 'mining, quarrying, metallurgical operations, and mineral products of the world.'

To proceed in order:—Professor Graham's report on chemical processes and products, (No. 2,) contains a description of the amorphous phosphorus manufacture, by which not only are the common lucifer matches rendered no longer spontaneously inflammable, but the workmen are saved from the very injurious effects of the process as it was formerly carried on. There are also short articles upon some other important chemical products, in which great improvements have been made. There are indeed only a few pages in this report, exclusive of the mere catalogue part of it; but what is done in those few pages is done in a distinct and intelligible way, and they are consequently worth much more than a much larger quantity of such pages as many of the other reports occupy.

That part of the report No. 4 which belongs exclusively to vegetable substances, by Professor Solly, (now the Secretary to the Society of Arts) is very elaborate and comprehensive. Solly, like Solomon, has spoken not only of trees from the cedar tree that is in Lebanon even to the hyssop that springeth out of the wall, but of all manner of vegetable products made out of these trees and plants. Flax and cotton, and flax-cotton, gutta serena, caout-

chouc, oils, dyes, and the impregnation of timber with tar, are all here described. And in this article of flax-cotton, by the way, we see one of the many instances in which the world is now running after something as a new discovery, which only failed in coming into use many years ago in consequence of 'the trade' combining against it. This volume of reports mentions many such instances; and probably nobody who has had anything to do with inventors or inventions, has failed to see and be disgusted with the pertinacity with which 'the trade' (as it is called) in almost every branch of industry conspires, in England, to run down everything like an improvement, in which they see, or fancy they see, a diminution of their own immediate profits, or an increase of their trouble. The evidence before the patent law committee last year disclosed some instances in which there was little or no doubt that even patents had been bought up, for the express purpose of suppressing the inventions for which they were obtained. It is true that a good deal of this difficulty in introducing new inventions proceeds from the workmen, who invariably demand, and in most cases can obtain, increased wages for making anything different from what they are used to; and consequently they often succeed in completely keeping out of use, by the increased price, inventions which, if properly worked, would produce the same or a better article at a reduced price. But it is impossible to deny that the masters are not unfrequently as bad as the workmen, and positively refuse to keep for sale articles which are likely to compete with those out of which they have previously made their profits. Sometimes this kind of conduct answers for a few years, perhaps longer; but in the majority of instances the effect of it is, that the trade takes itself off to France or America; the London shopkeeper, before long, finds himself obliged to sell American clocks at gross prices less than what used to be his mere profits on English ones; and

we see our brother Jonathans fighting among themselves for the glory of inventions—such as the reaping-machine, for instance—which were actually carried over from here in disgust at the obstinacy of our own countrymen in refusing to adopt them.

In the report (No. 5) 'on machines for direct use,' Professor Moseley has investigated the powers of the several centrifugal pumps, which were regarded by most spectators as one of the wonders of the Exhibition. There is also a notice of a machine, almost, if not quite, unknown in this country, called in France a *turbine*, which is a kind of horizontal water-wheel, to be used where there is only a very small fall of water. A meter, analogous to the well-known instruments called gas-meters, for measuring the quantity of water sent through a pipe, appears still to be a desideratum. It certainly seems strange that the meter for the heavier fluid should be more difficult to contrive than for the lighter; but so it is, for reasons which we cannot now enter upon.

Railway engines and carriages belonged to Professor Moseley's department; and on them the report is less ample than we should have expected. But railway engineering was in less need than most things of the stimulus of the Exhibition; and we are afraid that something stronger than an Exhibition is required, to produce an improvement in what we have heard a great authority call the *moral engineering* department, which appears to be getting worse instead of better every day.*

Baron Dupin's report (No. 8), to which we have referred already, is further remarkable as having been written by him in English. The most interesting part of it is that which belongs to the title of naval architecture, under which he notices several important modern inventions, such as Sir William Snow Harris's celebrated inventions for protecting ships from lightning; Lieutenant Rodgers's anchor, which appears, from subsequent trials, to be well

* See *Fraser's Magazine* for January, 1851; and the *Times* every day, and especially the articles on Railway Mismanagement, of the 12th and 16th of the month just past.

sustaining the credit which this jury gave to it; and several forms of a new mariner's compass invented by Mr. Dent, the chronometer-maker, which is stated to possess great advantages, both in steadiness and delicacy, over the ordinary construction.

Mr. Pusey's report (No. 9) on agricultural implements, was, like the department to which it belongs, treated differently from the others, in being published separately nearly a year ago; and therefore it has of course been long ago considered and discussed by those whom it concerns, and it would be superfluous now to say anything about it, except that it is only due to it to remark that it is one of the most careful, as well as one of the most readable reports in the volume, and must, as far as we can judge, be a very valuable addition to agricultural literature.

Then we come to the very comprehensive class of philosophical instruments (No. 10), with its thirty-one council medals. Seeing on the jury the names of two such eminent and elegant writers on science as Sir John Herschel and Sir David Brewster, it is impossible not to regret that one of them was not able to undertake the duty of reporting; though when we look at the mass of subjects which had to be examined for this report, and in a way which probably was required in no other case, we can hardly wonder at their shrinking from an undertaking from which neither of them could expect such an addition to their reputation as would be commensurate with the trouble it involved. Mr. Glaisher however has performed this laborious duty with exemplary diligence; and there is probably no report in the volume which required so much scientific investigation of the details of an extremely large class of instruments.

There is one passage in this report which we think deserving of particular attention, on the much agitated subject of patents, on which public opinion is now diverging into two exactly opposite directions; one towards granting patents with the utmost facility, and the other towards abolishing them altogether. In this state of things we think the following announcement, in the report of that jury which may be said to represent

the science of the world, possesses singular significance:—

‘We cannot help recording how clearly the injurious effects of patent enrolments on science was shown in the course of our labours. Many of the ingenious contrivances exhibited proved to be merely variations for avoiding the infringement of patents. In many cases the subjects patented were of a very trifling nature; but still their effect was to *shut up the path in that direction from further improvement*. The great advance of photography, and the perfection of the microscope are chiefly due to the avoidance [on technical grounds] of patents in connexion with their improvements.’

The subject of patents is much too large to be discussed here, and probably any farther change of the law in either direction would be resisted until the public has had some trial of the cheapening of patents which has just now come into operation, and which we, in common with persons of more experience, believe will hasten their complete destruction, by making the bad effects of this ‘shutting up of the path to further improvements’ more general, and therefore more intolerable. We will now, therefore, only take leave to suggest an answer, which we are surprised was not given by some of the witnesses examined last year by the parliamentary committee, to the defence of patents on the analogy of copyright; it is this—(1.) You are perfectly certain that by granting copyright to an author you do not prevent anybody else who might have invented the same piece of literature from enjoying the benefit of his invention; because no two people ever could have written the same thing. (2.) Neither can copyright ever stand in the way of *improvements*, by the very nature of literature. And (3.) you can *not* have a copyright in the only literary production which anybody else can wish to adopt, in the sense in which patentable inventions can be adopted, viz., for improved methods of performing calculations, by which as much labour may really be saved as by many mechanical or chemical inventions. Newton could not have patented the differential calculus, nor could Napier have been enabled to sell licences for the use of logarithms, or Briggs for the improvement of them; though for a sliding-rule or other calculating *machine* for doing the same thing

they might. In every respect therefore the assumed analogy between patent-right and copyright fails, and like other false analogies only raises an argument in the opposite direction to that for which it is produced.

The report on musical instruments (10 A) by Sir H. Bishop, with contributions from several other members of his jury, contains some information on a point on which we, at any rate, had not been able to obtain it previously, viz., the invention of what is called the *pneumatic stop* for organs, by which the bellows-blower in fact performs the heavy part of the work of opening and closing such stops as the player indicates, by the usual action of pulling out or pushing in the handles. The report also contains a concise history of the different improvements in the piano, and some of the wind instruments.

Mr. Denison (10 B) rushes *in medias res horologicas*, as if he had written the mere business part of his report first, and intended to write an introduction to it afterwards, and had then changed his mind. He has described several compensated balances for chronometers, and new escapements, and also some of the large clocks in the Exhibition, especially Mr. Dent's cast iron one, which was equally remarkable for the ugliness of its external fittings, and for the apparently unparalleled accuracy of its time-keeping; and not less so for the commotion which its success excited among what Mr. Denison, in a Parliamentary paper lately published about the great Westminster clock, calls, 'a certain set of clockmakers who are always ready to join in any attempt to do a little mischief to Mr. Dent.'

There is rather a curious note appended to this report, about some clockmaker (it is not difficult, from his advertisements, to guess his name) who appears to have attempted to impose on the horological jury, as well as on the public, the belief that he is 'clockmaker to the Royal Observatory,' with no other claim to the title than that Mr. Airy once employed him to do some very ordinary work there, and dismissed him for doing it ill. It is high time there was some legal

means of punishing this very common method of obtaining money under false pretences. We remember seeing that a lord chief justice had assured the bar it was quite untrue that he was in the habit of taking somebody's 'antibilious pills,' notwithstanding the public were daily invited in the newspapers to follow such a learned example. Fair advertising has become an almost necessary condition to success in many trades, and the highest names are now to be found in the supplement to the *Times*, and on the backs of magazines; but this system of advertising lies has long made all advertisements suspicious which assert anything more than that such a man sells such things—good or bad, as it may be—at such a price.

Mr. Green's report (10 c) on surgical instruments, is short, but well written. From the nature of the subject, it is only adapted for a limited class of readers: our limits warn us to pass on to more generally interesting matters; and here we may take a considerable leap. For, except a few pages on leather and skins by the two reporters of class 16, there is nothing worth notice until we come to the very elaborate and interesting report on paper and printing (No. 17), which occupies no less than sixty pages. This also is a joint production; and the name of the subject is enough to indicate that a well-written report upon it must be one of the best worth its paper and printing of any in the volume. Here is mentioned another of those disgraceful cases before alluded to,—of the purchase of a patent machine for the express purpose of destroying it, and suppressing the invention, which was, in this case, one for a cheaper mode of making types. Besides other things which will naturally be looked for in this report, there is an interesting account of the progress of the art of making books for the blind to read.

Everybody remembers the envelope-making machine in the main avenue of the Exhibition, which, as this report truly enough says, was frequented by such crowds that many people were not able to see it at all. Of the other machine for the same purpose, which was certainly

less attractive, the report speaks thus—'Messrs. Waterlow also had 'a folding machine at work in the 'machinery department. It was 'patented by M. Remond some years 'after that of De La Rue and Co.' The natural, if not the intended, inference from this is, that this other machine was something very near a copy from the machine of De La Rue and Co., only just constructed so as to evade their patent. The fact however is, that it was a machine of extremely different construction and operation; doing silently, and by currents of air, what the other machine does with a great clatter of flaps and levers; requiring no painful-looking youth to sit, like a marble boy with a live arm, feeding it carefully with every individual bit of paper to be made into an envelope, but feeding itself by a kind of suction from a pile of such papers; and (if we remember right) also embossing the seal-stamp on the envelope as it passes through the machine, which De La Rue's does not. Its comparative unpopularity with the mass of visitors to the Exhibition is easily accounted for by the advantages of position and of noise (which is really a defect in all except hammering machinery) which the other one possessed. Its comparative unpopularity with the authors of this report is accounted for with equal facility by the fact that the report is signed 'T. De La Rue.'

In the nineteenth report the state of the lace trade and carpet manufacture is exhibited. This jury appears to have been under the impression that the articles in their class were 'more numerous and various than in any other class in the Exhibition;' an impression which we have no doubt was exceedingly common among the jurymen of nearly every one of the thirty-four classes; indeed several of them almost avow as much. There is nothing very remarkable in this report. And of the next four reports we have said already all that need be said. Lord De Mauley's, on glass (No. 24), is an exceedingly good one. It deals with the subject in a masterly way, entering very fully into both the historical and chemical details of that very important manufacture. In this report, as

well as in the one on philosophical instruments, Mr. Chance's great achievement, of a disc of twenty-nine inches diameter, and weighing two cwt., for a telescope lens, is noticed. Part of this report is devoted to the now reviving art of glass painting, and is written by Mr. C. Winston, a distinguished amateur of that art, though not a member of the glass jury.

The reports from the 26th to the end occupy no less than 200 pages, or more than a quarter of the volume, and they all, except the first of those on the fine arts before referred to, enter minutely into the details of the subjects to which they relate. The longest of these, and indeed the longest but one of all the thirty-six reports, is the one on miscellaneous manufactures; and miscellaneous it certainly is. Soap, candles, lucifer-matches, comfits, artificial flowers, stuffed birds, writing-desks, walking-sticks, umbrellas, tobacco-pipes, fishing-tackle, toys, wafers, and sundry other small fry, have all received their full measure of attention from the two joint reporters of class twenty-nine, and their report deserves the same attention from the readers of this volume.

Report 26, by Professor Roesner, of Austria, on furniture, in which his country was distinguished by its elaborate but ponderous productions, gives some useful information on the methods of making certain kinds of ornamental furniture, and the history of the manner in which the best of furniture woods, mahogany, made its way into good society through the medium of a candle-box, which the workmen were with great difficulty persuaded to make, the wood being pronounced by them, with their usual resistance to anything new, to be too hard to work, though it is certainly not so hard as oak, which 130 years ago was used even more than it is now. The papier maché and stamped leather manufactures are also described in this report.

In Report 27, by Professor Ansted, on all kinds of stone-work and its appendages, will be found a description and a picture of the famous stone-veneering with malachite, for which the Russian portion of the Exhibition was so conspi-

cuous. The important article of cements, in which great advances have been made of late, is here discussed, as well as that of bricks. The repeal of the duty on bricks does not appear to have yet produced anything like such a rapid or extensive improvement in them as was caused by the removal of the like restrictions on glass; but the duty on glass was very much higher in proportion to its value, and was levied in a much more inconvenient way. This report however makes out a saving of about fifty per cent. in the cost of building, besides other advantages, by the use of the new hollow bricks, of which Prince Albert's cottages were built; and these bricks also appear to be no exception to the proverb quoted in one of these reports, 'There is nothing new except what is old.'

The report on class 28, by Dr. Lankaster, is chiefly devoted to the caoutchouc and gutta percha manufactures; both of which, especially the latter, are of very modern growth: the very name of gutta percha being only a few years old, and India rubber 'bottles,' in which nothing was ever bottled except a little dirt, having been about twenty years ago the most advanced stage of the caoutchouc manufacture. After that it first reached the stage of 'mastication' (not the old process of that kind by which schoolboys used to prepare it for making 'crackers'—of air not gunpowder), and cutting into sheets, and into 'the small parallelopipedons used by draughtsmen to rub out the marks of black lead pencils.' Then came the discovery of the method of dissolving it, and spreading it on cloth to make 'Macintoshes;' and finally came vulcanization—i.e., sulphurization; by which its elasticity is extended to such degrees of heat and cold as would before have respectively nearly melted it and made it as hard as 'wooden nutmegs,' and which has also extended its uses to nearly everything for which elasticity is required. The progress of the gutta percha manufacture has been still more rapid, though it has not evoked so many distinct inventions.

We do not know how it happens that the last division of the Exhibition—viz., that of the fine arts (except painting), class 30, presents the

unique instance of two opposition reports. The only one which deserves to be called a report at all is not that by the appointed reporter, but what is called a Supplementary Report by Dr. Waagen, another member of the jury. But even this is little more than a pretty full description of the articles exhibited or rewarded. Besides these two, there is yet another, very much better than either of them, called the 'Supplementary Report on Design,' and not confined to the articles in class 30, but extending over the whole Exhibition, written by Mr. Redgrave, at the request of the Commissioners. This report appears to us particularly valuable moreover, as an illustration of our opinion that all the reports would have been much better if the writers of them had not been encumbered by their connexion with the prize-giving scheme. We cannot pretend, with any regard either to our own limits, or to the extent of this report itself, to give any summary of it; we can only commend it to the attention of all who feel interested in the improvement of the art of designing, in which English artists have long been thought to need improvement more than any other.

At the same time we cannot help remarking that there appears to be rather too much disposition on the part of those who have been and still are the moving powers of the Exhibition and its belongings, to give an undue preference to one of the three names in the title of their own society, which was the real parent of the Exhibition over the other two. The Arts may have been too much overlooked in the prosecution of Manufactures and Commerce in a merely commercial and short-sighted spirit. But that is no reason why we are to forget that, after all, it is not in a highly civilized, but in a very imperfectly civilized state, that the cultivation of the arts takes precedence of that of commerce or manufactures, or above all, of science, which is the true and faithful handmaid of them both; and the ignorant and contemptuous neglect of which has long been, as Dr. Playfair so well set forth in his lecture on the Exhibition, the real opprobrium of the great mass of English artisans of all degrees.

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